

ABSTRACT

A continuous measurement-while-drilling surveying apparatus includes a fiber optic gyroscope sensitive to rotation about the tool spin axis of the bottom hole assembly and a second fiber optic gyroscope sensitive to rotation of the bottom hole assembly about an axis normal to the tool spin axis. The first gyroscope may be shaped as a torus to accommodate flow of drilling mud through the bottom hole assembly. The outputs of the first and second gyroscopes are processed together with acceleration signals from three accelerometers in a microprocessor which determines the orientation, velocity and position of the bottom hole assembly on a continuous basis.